University of Massachusetts Worcester

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Analysis of House Bill 2663 and Senate Bill 1260 As Related to Nurse Staffing

Part I: Comparative Analysis and Policy Implications

Prepared at the request of Senator Richard T. Moore (D-Uxbridge) and Representative Stephen Tobin (D-Quincy) by:

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Acknowledgements

The goal of this analysis is to promote a better and broader understanding of the issues surrounding nurse staffing as addressed in House Bill 2663 and Senate Bill 1260. We also attempt to highlight the policy implications of both bills to allow the Commonwealth of Massachusetts the best opportunity to make well-informed health policy decisions.

Many people contributed to this report by supplying information and/or helpful comments. In particular, we would like to acknowledge the members of the University of Massachusetts Worcester[1] workgroup who invested their time, insight, and expertise into this project. The views expressed in this report are based on research conducted by the project team working at the UMass Center for Health Policy and Research, and may not reflect the institutional views of University of Massachusetts Worcester or affiliates on the subject matter.

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[1] University of Massachusetts Worcester is one of five University of Massachusetts campuses. No present operation of University of Massachusetts Worcester will benefit from passage of either bill.

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Executive Summary

Concerns about patient safety and quality of care due to insufficient nurse staffing have been raised in the last decade. These concerns have prompted a number of states to consider staffing standards by legislating minimum nurse-patient ratios.[2] Thus far, California is the only state that has actually enacted mandatory minimum ratios; these took effect in 2004.

Currently, the Massachusetts Legislature is debating the merits of House Bill 2663 and Senate Bill 1260. The two bills are similar in their objectives: the improvement of patient safety, quality of care, and nurses' work environment by adding more nurses to bedsides. However, the two bills propose different approaches. HB 2663 mandates specific minimum nurse-to-patient ratios, while SB 1260 requires hospitals to create nurse staffing plans based on patient acuity levels, nursing skill mix, and other hospital-specific operational variables.

At the suggestion of Senator Harriette Chandler (D-Worcester), Senator Richard Moore (D-Uxbridge) and Representative Stephen Tobin (D-Quincy), the Co-chairs of the Special Committee on Nursing Ratio Legislation, requested that University of Massachusetts Worcester (UMass) develop an analysis of the policy and economic implications of the two bills. The analysis is delivered in two parts, Part I: Comparative Analysis and Policy Implications and Part II: Economic Analysis of HB 2663 and SB 1260.

Part I, delivered here, has the following objectives: 1) to summarize findings from the health care literature; 2) to describe and compare the two bills; and 3) to provide high-level policy implications with respect to potential benefits and risks associated with passing either HB 2663 or SB 1260.

The Part II report, to be delivered on September 1, 2005, will 1) estimate the financial impact of the passage of HB 2663 on selected facilities; 2) estimate the financial impact of SB 1260 on nursing schools and colleges; 3) estimate the financial impact on the Department of Public Health (DPH) and other public agencies responsible for monitoring and enforcing provisions of both bills; and 4) provide high-level economic implications with respect to benefits and risks associated with enacting either of the two bills.

Findings

Substantial evidence in the literature suggests that higher nurse-to-patient ratios are associated with lower patient mortality rates, shorter inpatient lengths of stay, and fewer

[2] In the literature, nurse staffing is usually presented as nurse-to-patient ratios, such as 1:4 or 1:8. In this document, we follow this convention, and will sometimes refer to "higher" and "lower" nurse-to-patient ratios. These ratios may be thought of as fractions (i.e., 1/4 or 1/8). A nurse-to-patient ratio is "higher" if its numerical value is closer to 1. For example, a 1:4 ratio is greater than a 1:8 ratio, just as 1/4 (.25) is greater than 1/8 (.125).

complications and medical errors. In addition, higher staffing levels can reduce strain on the working conditions of the nurses and improve job satisfaction. Policy makers in Massachusetts and nationally are debating how to determine appropriate nurse staffing levels, and whether mandated staffing ratios are the best strategy to reach these levels, and thus to improve nurse-sensitive quality of care indicators. At present, there is no scientific evidence in the literature that would establish optimal nurse staffing ratios.

Table 1: Key provisions of House Bill 2663 and Senate Bill 1260

	Mandated Ratios	Hospital Reporting	DPH Monitoring	Prohibits Mandatory Overtime	Nurse Staffing Plan	Quality Measures	Work Force Develop-ment
House Bill 2663	✓	✓	✓	✓	✓		
Senate Bill 1260		✓	✓		✓	✓	✓

In general, both bills mandate that hospitals use a nurse staffing plan, based on patient acuity, nursing skill mix, and other hospital operational factors. These staffing plans are to be reported to DPH, which would monitor and enforce the law. The major difference between the two proposals is that HB 2663 mandates minimum ratios, while SB 1260 does not. Furthermore, HB 2663 prohibits mandatory overtime, while SB 1260 does not. Other key differences are that SB 1260 has provisions for measuring the impact of nurse staffing on patient safety and quality of care, and provides financial support for workforce development (mostly grants for nursing school students and faculty payment), while HB 2663 has no provisions in these areas. Neither of the bills has any provision to measure changes in the work environment of nurses in response to richer staffing. (Table 1).

Conclusions

After reviewing the literature and features of the two bills, we conclude that certain provisions of both bills have potential benefits for all stakeholders involved (patients, nurses, hospitals, public and private payers). We find the most potential benefit, and the least potential risk, in the following elements of the two proposals.

1. Patient safety and quality of care

Because the exact relationships between specific nurse-to-patient ratios and safety/quality of care are not presently known, provisions requiring hospitals to develop and implement staffing plans as required by SB 1260 make the most sense for the near future. Combined with the bill's policies for data collection on outcomes, nurse staffing plans would be a powerful tool for evaluating hospitals on staffing adequacy and patient care. The involvement of DPH and other public agencies in monitoring and evaluations

will provide incentives for hospitals to improve their nurse staffing levels to achieve better patient outcomes.

2. Accountability and transparency

Both proposals would strengthen hospital accountability and provide transparency to the legislature and the public by requiring hospitals to develop nurse staffing plans and submit them to DPH. Both proposals also give DPH the authority to monitor the content and implementation of these plans. Both proposals require hospitals to post their staffing plans for each day in a public space. Both bills also give DPH the authority to penalize hospitals that are in non-compliance. Unlike HB 2663, SB 1260, however, does not specify the penalties, leaving any penalty to be determined by DPH.

3. Costs and access to care

At this point, we are unable to evaluate the potential impact of either HB 2663 or SB 1260 on hospital costs, or to determine whether additional costs would result in reduced access to care. Either bill, if enacted, will almost certainly lead to increased nursing labor costs for hospitals. While there may be cost offsets (higher quality of care and lower level of service utilization) associated with higher nurse staffing, the extent of these is not known at present. Part II of this report, to be delivered by September 1, 2005, will provide estimates of the cost of compliance with HB 2663 for a sample group of hospitals. (Because HB 2663 mandates specific staffing ratios, it is possible in theory to estimate the actual costs to hospitals.) Part II will also provide an estimate of the costs of monitoring and evaluation that DPH and other public agencies may incur under both HB 2663 and SB 1260.

4. Labor market and workforce development

SB 1260 directs state agencies to evaluate programs relating to nursing education and workforce development, and establishes a $30 million trust fund to further these goals. These are critical first steps. The nursing shortage is a serious, long-term problem that will require a real, lasting commitment of resources and energy to solve.

Part II of this report (due on September 1, 2005) will 1) assess the financial impact of the passage of HB 2663 through sampling of selected facilities; 2) estimate the financial impact of SB 1260 on nursing schools and colleges; and 3) provide high-level economic implications with respect to benefits and risks associated with passing either of the two bills.

Part I: Comparative Analysis and Policy Implications

Background and goals

Senator Harriette Chandler (D-Worcester) suggested to Senator Richard Moore (D-Uxbridge) and Representative Stephen Tobin (D-Quincy), the Co-chairs of the Special Committee on Nursing Ratio Legislation, that they request from University of Massachusetts Worcester (UMass) an analysis of the policy and economic implications of two bills, House Bill 2663 and Senate Bill 1260. These bills are currently before the state legislature and relate to hospital nurse staffing. HB 2663 mandates specific minimum nurse-to-patient ratios, while SB 1260 requires hospitals to create nurse staffing plans, based on patient acuity levels and other hospital operational variables.[3]

Concerns about the nursing shortage have prompted a number of states besides Massachusetts to consider legislation similar to HB 2663. Some states are considering bills that would establish mandatory minimum nurse staffing ratios and/or bills that would prohibit mandatory overtime without requiring specific ratios.[4] So far, California is the only state to have enacted mandatory ratios, which took effect in 2004.

Other states have adopted or are considering laws or regulations similar to SB 1260. For example, Texas and Oregon now require hospitals to develop and implement nurse staffing plans. In Texas, nurse-sensitive patient outcomes will be tracked to evaluate staffing plans of hospitals, while Oregon will randomly audit hospitals.[5]

UMass has been requested to compare the likely policy and economic implications of the two bills. This analysis will be delivered in two parts. Part I of the report, delivered here, will accomplish the following:

- Summarize findings from the health care literature on three aspects of mandatory nurse-to-patient staffing ratios: 1) patient safety and quality of care, 2) cost to facilities and access to care, and 3) nursing labor market.
- Describe and compare the two bills.
- Provide high-level policy implications with respect to benefits and risks associated with enactment of either HB 2663 or SB 1260.

Part II of the report, to be delivered on September 1, 2005, will do the following:

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[3] In the literature, nurse staffing is usually presented as nurse-to-patient ratios, such as 1:4 or 1:8. In this document, we follow this convention, and will sometimes refer to "higher" and "lower" nurse-to-patient ratios. These ratios may be thought of as fractions (i.e., 1/4 or 1/8). A nurse-to-patient ratio is "higher" if its numerical value is closer to 1. For example, a 1:4 ratio is greater than a 1:8 ratio, just as 1/4 (.25) is greater than 1/8 (.125).

[4] A listing of pending bills may be found at http://www.himss.org/advocacy/news_tracker.asp

[5] http://www.nursingworld.org/gova/state/2004/staffing.htm

- Estimate the financial impact of HB 2663 on selected facilities.
- Estimate the financial impact of SB 1260 on nursing schools and colleges.
- Estimate the financial impact on the Department of Public Health (DPH) and other public agencies of the monitoring and enforcement provisions of both bills.
- Provide high-level economic implications with respect to benefits and risks associated with enacting either of the two bills.

Findings from a focused literature review

To understand the potential benefits and risks associated with passing either of the two bills, we conducted a high-level, focused review of the nursing literature. We organized our findings in the following three key policy areas: 1) patient safety and quality of care, 2) cost to facilities and access to care, and 3) nursing labor market. From the literature review the following findings emerge:

Impacts of nurse staffing on patient safety and quality of care

Much research on nurse staffing, patient safety, and quality of care has been produced in recent years. Here we review the findings of a number of key studies, drawn from the top peer-reviewed medical and health services research journals, and written by the leading researchers in the field of nursing and health care outcomes. While these studies have varied considerably in terms of setting, methods, and safety/quality indicators of interest, they have all found evidence that, in certain circumstances, increased nurse staffing is associated with better patient safety and quality of care. However, this literature provides no scientific basis for specific nurse staffing benchmarks, such as minimum nurse-to-patient ratios.

Researchers have examined a wide variety of quality measures and patient outcomes. These can be broadly grouped as follows: mortality, length of stay, adverse events (complications), and medical errors. Some researchers have focused solely on one of these four types of outcome measures, while others have looked at sets of measures that encompass more than one category. In addition, a number of researchers have used survey data to gauge the effect of working conditions on the job satisfaction of nurses. Job satisfaction has important implications for patient outcomes as well as for the nursing shortage itself.

The evidence on nurse staffing and inpatient mortality is mixed. Aiken and colleagues analyzed death rates within 30 days of admission for surgical patients in Pennsylvania hospitals. They calculated that each additional patient added to the average nurse workload increased the likelihood of both overall patient mortality (i.e., in-hospital death) and mortality following a complication (known as “failure to rescue”) by 7% each.[6] This

[6] Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction. *Journal of the American Medical Association.* 2002; 288(16): 1987-93.

odds ratio suggests that decreasing the nurse-to-patient ratio (i.e. raising the number of patients cared for by each nurse) from 1:4 to 1:6 would increase the odds of patient mortality by 14%. A move from 1:4 to 1:8 would raise the likelihood of patient mortality by 31%. Translating this to numbers of patient deaths, the 1:8 nurse-to-patient ratio would increase the expected number of deaths by 5 per 1000 patients. Looking only at the subset of patients with complications, an additional 18.2 deaths per 1000 would be expected.[7]

However, another comprehensive study of patient outcomes did not find a strong link between nurse staffing and mortality. Needleman and colleagues analyzed administrative data on both medical and surgical patients from 799 hospitals in 11 different states. They did not find a statistically significant association between registered nurse (RN) staffing levels and in-hospital mortality, although they did find evidence that higher staffing is associated with lower rates of failure to rescue.[8]

Research examining the relationship between nurse staffing and length of patient hospital stays is more conclusive than that on nurse staffing and inpatient mortality. Although Needleman and colleagues found no impact on mortality, they found strong evidence that both a higher proportion of RNs in the nurse staffing mix and more RN hours per patient day were associated with decreased length of stay.[9] Earlier research using hospital cost data from California and New York found the same relationships.[10] These findings are particularly relevant to health care costs: if higher nurse-to-patient ratios result in reduced length of stay, then the savings in hospital utilization might at least partially offset the increased costs of additional nurse staffing. According to a recent article by Rothberg and colleagues, the savings from shortened length of stay improve the cost-effectiveness of increased staffing, although the savings only offset half of the increase in labor costs.[11] In addition, it is important to note that savings resulting from lower lengths of stay would largely accrue to payers, while hospitals would incur the costs of additional staffing.

A variety of studies examined the impact of nurse staffing on adverse events, i.e. complications arising during a patient's hospital stay. Examples of adverse events include hospital-acquired infections, pneumonia, sepsis, decubitus ulcers (bedsores), and patient falls. Needleman and colleagues found statistically significant inverse relationships between nurse-staffing patterns and rates of urinary tract infection, upper gastrointestinal bleeding, pneumonia, and cardiac arrest among medical patients.[12] Unruh also found that increased nurse staffing was associated with reductions in

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[7] Ibid.
[8] Needleman J, Buerhaus P, Mattke S, Stewart M, Zelevinsky K. Nurse-Staffing Levels and the Quality of Care in Hospitals. *New England Journal of Medicine*. 2002; 346(22):1715-22.
[9] Ibid.
[10] Lichtig LK, Knauf RA, Milholland DK. Some Impacts of Nursing on Acute Care Hospital Outcomes. *Journal of Nursing Administration*. 1999; 29(2): 25-33.
[11] Rothberg MB, Abraham I, Lindenauer PK, Rose DN. Improving Nurse-to-Patient Staffing Ratios as a Cost Effective Safety Intervention. *Medical Care.* 2005; 43 (8): 785-91.
[12] Needleman JP, Buerhaus P, Mattke S, Stewart M, Zelevinsky K. Nurse-Staffing Levels and the Quality of Care in Hospitals. *New England Journal of Medicine*. 2002; 346(22): 1715-22.

atelectasis (lung collapse), decubitus ulcers, falls, and urinary tract infections in a sample of Pennsylvania hospitals.[13]

Medical errors (which may be considered a distinct subset of adverse events) in the nursing context generally involve errors in the administration of medication. With an increased patient load, a nurse may be more likely to make such an error. A study by Sochalski surveyed RNs in Pennsylvania hospitals, asking questions about patient workload and problems with patient safety. These are measures designed to capture medication errors (along with patient falls). The survey found that nurses reporting higher workloads also tended to report more frequent medical errors (and patient falls, another important safety issue) occurring in their units over the previous year.[14]

Aside from the number of patients for whom a nurse has responsibility, the number of hours worked by nurses is an important factor in medical error rates. A study by Rogers and colleagues in which nurses used logbooks to record their hours worked, and to anonymously self-report errors, found that the odds of making an error during a shift of 12.5 hours or longer were over three times as great as during a shift of 8.5 hours or less.[15] Moreover, extensive overtime work may have negative impacts on the health and well-being of nurses themselves. A study looking specifically at Canadian nurses found overtime work to be associated with lost time due to injury claims.[16] Findings similar to this prompted the Institute of Medicine (IOM) to recommend, in its recent study of the nursing work environment, that the length of nursing shifts be limited to 12 hours in any 24-hour period, whether such shifts are mandatory or voluntary.[17]

Another key area of research is the impact of working conditions, including patient workload, on the job satisfaction of nurses. Job satisfaction can have both immediate and longer-term effects on patient safety, outcomes, and the quality of care. In day-to-day care settings, nurses who experience dissatisfaction with their jobs may perform less well than those who are happier with their working conditions. In the longer term, job dissatisfaction can result in nurse burnout. Nurses experiencing burnout are more apt to leave the profession, thus exacerbating the labor supply problem. Surveys indicate that there is indeed a serious problem with nurse job dissatisfaction and consequent burnout.

Aiken and colleagues found that 43% of Pennsylvania RNs surveyed received high scores on a psychological index designed to measure burnout, and that 41% reported

[13] Unruh, L. Licensed Nurse Staffing and Adverse Events in Hospitals. *Medical Care*. 2003; 41(1): 142-52.
[14] Sochalski J. Is More Better?: The Relationship Between Nurse Staffing and the Quality of Nursing Care in Hospitals. *Medical Care*. 2004; 42 (2 Suppl): II67-73.
[15] Rogers AE, Hwang W, Scott LD, Aiken LH, Dinges DF. The Working Hours of Hospital Staff Nurses and Patient Safety. *Health Affairs*. 2004; 23(4): 202-12.
[16] O'Brien-Pallas L, Shamian J, Thomson D, Alksnis C, Koehoorn M, Kerr M, Bruce S. Work-Related Disability in Canadian Nurses. *Journal of Nursing Scholarship*. 2004; 36(4): 352-7.
[17] Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: National Academies Press, 2004, p. 237.

that they were dissatisfied with their jobs.[18] By contrast, national surveys indicated that only 10-15% of workers overall reported job dissatisfaction. The nurse survey found these negative feelings foreshadowing future problems with retention: almost 23% of nurses surveyed, and 33% of those under 30 years of age, reported planning to quit their current jobs within the next year.[19] Another study by Aiken and colleagues also found statistically significant relationships between lower nurse-to-patient ratios and higher levels of reported dissatisfaction and burnout among the Pennsylvania nurses surveyed.[20]

While more intensive staffing patterns may induce some nurses to return to the field, this return in itself may not be sufficient to solve the nursing shortage problem. For example, in Australia, the State of Victoria introduced mandated minimum ratios. While many nurses returned to the job, there were not enough nurses to meet demand, causing some hospitals to close beds to comply with regulation.[21] In addition to richer staffing, job satisfaction also depends on salaries, control over work schedules, support for nursing administrators, opportunities for advancement, input into policy and management decisions, and availability of support staff to perform non-nursing tasks.[22]

A substantial proportion of the available research suggests that greater nurse staffing may have beneficial effects on patient outcomes. However, there is no scientific evidence supporting any specific nurse-to-patient ratio benchmark. Similarly, while the literature strongly points to high levels of job dissatisfaction and burnout among nurses, it is not at all clear what specific staffing ratio would alleviate these problems. Although some of the studies discussed above make cross-sectional comparisons between different ratios, these comparisons arise from the data, not from any theoretical or empirical basis. In fact, there may be a point at which higher ratios produce no additional benefit to patients. Future data collection and research should seek to establish a scientific basis for determining optimum ratios.

Cost to facilities and access to care

Based on the debates in California over Assembly Bill 394 (AB 394), the financial impact of mandated ratios is likely to be an important factor in the political debate elsewhere in the country. AB 394, which was passed in 1999 and implemented in 2004, required the California Department of Health Services (DHS) to establish minimum nurse-to-patient ratios for RNs and LVNs[23] in acute care hospitals, acute psychiatric

[18] Aiken LH, Clarke SP, Sloane DM, Sochalski JA, Busse R, Clarke H, Giovannetti P, Hunt J, Rafferty AM, Shamian J. Nurses' Reports on Hospital Care in Five Countries. *Health Affairs*. 2001; 20(3): 43-53.
[19] Ibid.
[20] Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction. *Journal of the American Medical Association.* 2002; 288(16): 1987-93.
[21] Coffman JM, Seago JA, Spetz J. Minimum Nurse-To-Patient Ratios In Acute Care Hospitals In California. *Health Affairs*. 2002; 21(5): 53-64.
[22] Ibid.; Aiken LH, Clarke SP, Sloane DM, Sochalski JA, Busse R, Clarke H, Giovannetti P, Hunt J, Rafferty AM, Shamian J. Nurses' Reports on Hospital Care in Five Countries. *Health Affairs*. 2001; 20(3): 43-53.
[23] Licensed Vocational Nurse (LVN), equivalent to Licensed Practical Nurses (LPN).

hospitals, and specialty hospitals. DHS solicited proposals from stakeholders and an intense public debate followed.

Final ratios in the legislation took into consideration the findings of two studies that examined the potential impact of the various stakeholder proposals on staffing levels and costs to health facilities. Although actual results on the effects of the legislation will not be available until 2006 (because implementation of most of the ratios was delayed until January 2004, and in some cases January 2005), the California experience provides a good example of the questions and concerns mandated ratios bring to the surface, including staffing needs and labor costs.

The two studies, conducted by researchers at the University of California, San Francisco and the University of California, Davis, used different methodologies and data sources, but agreed that hospitals show variation in staffing patterns and prevailing wage rates by geographic region, and thus will be affected differently by the number of additional RNs needed and by changes in labor costs. The study by the University of California, San Francisco[24] estimated the impact of different proposals when the bill was still being debated. They estimated the ratios in the initial draft would affect just over 50% of the state's hospital medical-surgical units, with an average cost per hospital of almost $800,000. They further estimated that a stricter set of ratios, proposed by the Service Employees International Union (SEIU), would require 95% of hospitals to add nursing staff, at an average cost of $2.3 million per hospital.

Researchers at the University of California, Davis[25] used different data sets to produce two separate estimates of the financial effects of the competing proposals on hospitals in the state. The first set of estimates was based on administrative data. It shows that the most restrictive staffing proposal (1:3 nurse-to-patient ratio on average) would place 92% of hospitals outside the Kaiser Permanente network in financial deficit, and would require 5,586 additional licensed nurses, at a cost of $280 million per year. The least restrictive proposal (1:10 on average) would put 4% of hospitals in financial trouble and require 74 additional nurses hired costing $3.7 million per year. The second set of estimates was based on survey data from California hospitals. These estimates ranged from a low of 610 additional nurses needed for the least restrictive proposal (1:10 on average) to 30,000 additional nurses for the strictest proposal (1:3 on average). Cost estimates were also highly variable: a 1:10 average nurse-to-patient ratio would cost hospitals only $41 million per year, but a 1:3 average ratio would cost as much as $2 billion per year.

The California analyses suggest that some hospitals will be affected financially by mandated nurse-to-patient ratios. Therefore, policy makers are advised to look at the

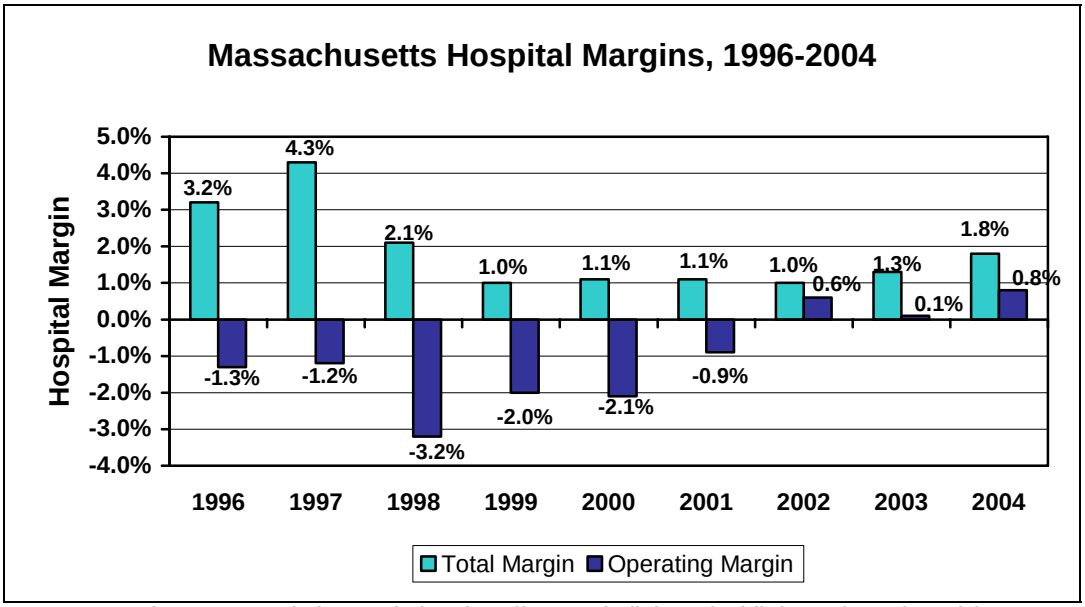
[24] Spetz J, Seago JA, Coffman JM, Rosendorf E, O'Neil E. Minimum Nurse Staffing Ratios in California Acute Care Hospitals. Center for the Health Professions, University of California, San Francisco. December 2000.

[25] University of California, Davis, Center for Health Services Research in Primary and University of California, Davis, Center for Nursing Research. Hospital Nursing Staff Ratios and Quality of Care: Final Report on Evidence, Administrative Data, an Expert Panel Process, and a Hospital Staffing Survey. May 2002.

current financial health of hospitals. According to a recent Massachusetts Hospital Association survey, the financial condition of hospitals in the state remains fragile.[26] After six consecutive years of poor financial performance, the median operating margin was 0.8% in 2004, an improvement of 0.1% over the 2003 level (Figure 1).

In 2004, approximately 42% of Massachusetts hospitals posted operating losses, and negative total margins were reported by 25% of hospitals.[27] In 2003, more than half of survey respondent hospitals delayed capital investment to cope with financial problems. Experts say that hospitals should maintain at least a 3% total margin to be viable in the long term. Hospitals in the state have not reached this level since 1997.

Figure 1



Source: 2004 Massachusetts Hospital Association, http://www.mhalink.org/public/news/2004/attach/news-03-16-2.pdf

Some of the mandated ratios proposed in HB 2663 are stricter (i.e. require higher nurse-to-patient ratios) than the final ratios adopted in the California legislation. For example, HB 2663 would require a 1:4 ratio in medical-surgical units, while the requirement in California is 1:5 (except during the first year of implementation when the required ratio is 1:6). Although there have been no large-scale bed closings reported in California, the nursing shortage and the additional financial burden on hospitals could lead to a reduction in hospital bed capacity, which may then result in an access problem for patients. Any reduction in hospital capacity and the extent to which hospitals can pass additional nursing costs on to payers (and therefore the broader public) should be carefully assessed to determine whether access to care is likely to be affected by mandated nurse-to-patient ratios.

[26] Massachusetts Hospital Association. Crisis In Health Coverage: A Call to Leadership. White Paper, March 16, 2004.
[27] Massachusetts Hospital Association. Massachusetts Hospitals Show Better Financial Returns. News Brief, February 15, 2005.

In Part II of the report, to be delivered by September 1, we will estimate the costs of compliance with HB 2663 for a sample of hospitals in Massachusetts. Unfortunately, publicly available data sources in Massachusetts are not as detailed as those used in the California analyses. Data on hospital nurse staffing and inpatient census in Massachusetts are not broken down by hospital unit. Consequently, we will need to survey hospitals directly to obtain this information. We are currently requesting this data from a sample group of hospitals in the state.

The nursing labor market

Much literature exists on the current state and outlook of the nursing labor market. The labor market is a very important area for policy makers to discuss because richer nurse-to-patient staffing ratios require more nurses on average, and more nurses with higher education levels and greater clinical knowledge to keep pace with advancements in medicine to treat older and sicker patients. Furthermore, to educate these nurses, an underlying educational infrastructure is required that includes clinical resources and faculty.

Demand for nurses will outpace the growth of supply

Although periods of high and low nursing vacancy rates in hospitals have fluctuated over time, the current shortage is distinctly different. According to a 2002 report by the Workforce Commission of the American Hospital Association, the current nursing shortage reflects fundamental changes in population demographics, career expectations, work attitudes, and worker dissatisfaction.[28] In fact, the present situation is likely to continue over the next fifteen years. A study conducted by the Health Resources and Services Administration (HRSA) predicts that nursing vacancies in hospitals will be more than five times larger in 2020 than in 2005: the current shortfall of 149,000 nurses is expected to grow to 808,000. Nurse vacancy rates are expected to grow from 7% in 2005 to 29% in 2020.[29]

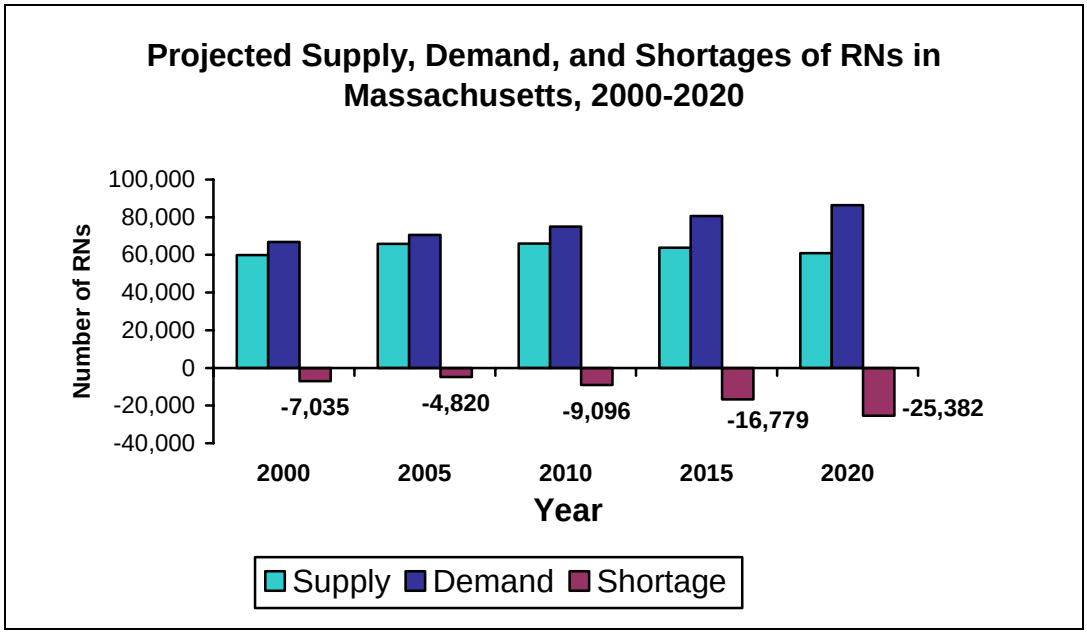
Although Massachusetts had 1,194 RNs per 100,000 residents, the most among all of the states in 2000, it still faces a nursing shortage.[30] According to the latest statistics from the Massachusetts Survey of Hospital Nurse Staffing, the overall hospital vacancy rate for RNs was 6.8%. Acute care hospitals reported a 6.7% vacancy rate, and specialty hospitals an 8.4% rate, in 2004.[31] HRSA forecasts that in Massachusetts, the

[28] American Hospital Association, Commission on Workforce for Hospitals and Health Systems. In Our Hands: How Hospital Leaders Can Build a Thriving Workforce. May 2002.
[29] Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020. Available at: http://bhpr.hrsa.gov/healthworkforce/reports/rnproject/default.htm
[30] Only the District of Columbia had more RN per 100,000 population (1,675) in 2000. Source: Government Accounting Office, Nursing Workforce: Emerging Nurse Shortages Due to Multiple Factors, July 2001, GOA-01-944, (Appendix).
[31] Massachusetts Hospital Association and the Massachusetts Organization of Nurse Executives, Survey of Hospital Nurse Staffing Issues in Massachusetts, 2004. Available at: http://www.mhalink.org/member/advisories/2004/attach/a-33-1.pdf.

nursing shortage in RNs will grow from 7% (4,820 RNs) in 2005 to 12% (25,382 RNs) in 2020 (Figure 2).[32]

Although the national shortage of nurses affected only 60% of the states in 2000, it is projected that 80% of states as well as the District of Columbia will face shortages by 2020.[33] That is, the current nursing shortage is expected to be a long-term and nationwide phenomenon. (It will be a long-term international problem as well.)

Figure 2



Source: U.S. DHHS, HRSA, Bureau of Health Professions, July 2002

What are the reasons for this permanent structural change? First, demand for nurses will grow faster than supply, at an annual rate of 1.7%, or a cumulative 40% over 20 years. Factors driving demand growth include an estimated 18% increase in the population by 2020, a larger proportion of elderly individuals in the population, especially those over 85 years of age, and medical advances that require higher nursing skills.[34]

Second, the RN labor supply is declining. Extensive research has been conducted into the causes of this decline. In a four-part series, Buerhaus and colleagues found that women born after 1960 have had more opportunities to enter formerly male-dominated professions than the baby-boomer generation; therefore they have a lower propensity to

[32] HRSA estimates are defined in full-time equivalent terms.
[33] Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020. Available at: http://bhpr.hrsa.gov/healthworkforce/reports/rnproject/default.htm
[34] Ibid.

choose nursing as a career.[35] But more importantly, the population cohort born after 1960 is smaller than it was in 1946-1960.[36]

Aging workforce

A key indicator of the declining labor supply is the fact that the RN workforce is aging, as fewer young people choose careers in nursing. Nationwide, the average age of the RN population was 45.2 years in 2000, up from 44.3 in 1996.[37] According to the Nurse Workforce Survey conducted by the Center for Health Professions at Worcester State College in 2001, the average age of nurses (LPNs[38] and RNs) in Massachusetts was approximately 3 years higher (48 years old) than the national average in 2001. Average ages of nurses in Massachusetts ranged from 46.3 years in Greater Boston to 49.1 years in Southeastern Massachusetts.[39] Today, four years after the survey, the average age of nurses is likely even higher. When the first wave of the 78 million member baby boomer generation retires in 2010, the RN workforce will shrink even further.[40] The shrinkage will occur at the time when an expanded nursing workforce will be most urgently needed. Since its nurse workforce is older, Massachusetts is likely to face nurse shortages faster than the nation as a whole.

Nurse shortages are now being observed in all types of hospital units, but particularly in Intensive Care Units (ICUs), which have traditionally attracted younger nurses. Researchers suggest two likely explanations for this. First, ICUs did not become common in hospitals until the 1970s and 1980s, so older RNs would not have been exposed to these units through clinical rotations during nursing school. Second, the high-intensity atmosphere of ICUs may have greater appeal to younger nurses.[41] Unfortunately, the proportion of younger nurses in the workforce is shrinking very rapidly: in 1980, 25.1% of the RN workforce was under 30 years of age, but by 2000 just 9.1% of the RN workforce was under 30.[42] In 2004, the highest vacancy rates in Massachusetts were observed in adult critical care units, rehabilitation, emergency departments, medical/surgical units, and telemetry.[43]

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[35] Staiger DO, Auerbach DI, Buerhaus PI. Expanding Career Opportunities for Women and the Declining Interest in Nursing as a Career, *Nursing Economic$*. 2000; 18(5): 230-6.
[36] Buerhaus PI, Staiger DO, Auerbach DI. Why are shortages of Hospital RNs concentrated in Specialty Care Units? *Nursing Economic$*. 2000; 18(3): 111-6.
[37] Spratley E, Johnson A, Sochalski J, Fritz M, Spencer W. The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses. Health Resources and Service Administration, Bureau of Health Professions, Division of Nursing, March 2000.
[38] Licensed Practical Nurse (LPN)
[39] 2001 Massachusetts Nurse Workforce Survey. Available at: http://www1.miseer.umass.edu/cicc/about.html
[40] Staiger DO, Auerbach DI, Buerhaus PI. Expanding Career Opportunities for Women and the Declining Interest in Nursing as a Career. *Nursing Economic$*. 2000; 18(5): 231.
[41] Buerhaus PI, Staiger DO, Auerbach DI. Why are shortages of Hospital RNs concentrated in Specialty Care Units? *Nursing Economic$*. 2000; 18(3): 114.
[42] Spratley E, Johnson A, Sochalski J, Fritz M, Spencer W. The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses. Health Resources and Service Administration, Bureau of Health Professions, Division of Nursing, March 2000.
[43] Massachusetts Hospital Association and the Massachusetts Organization of Nurse Executives, Survey of Hospital Nurse Staffing Issues in Massachusetts, 2004. Available at: http://www.mhalink.org/member/advisories/2004/attach/a-33-1.pdf.

There is also a shortage of RNs working in operating rooms nationwide. Operating room nurses are mostly graduates of hospital diploma programs (popular through the 1970s), rather than colleges.[44] Many hospital-based diploma programs closed in the past few decades. According to the HRSA report, for the period from 1995 to 2000, the number of new graduates with a hospital diploma declined by a cumulative 63.5%, those with baccalaureate degrees declined by 26%, and those with associate degrees declined by 16.5%.[45]

Shortage of nursing faculty

At this critical time when more nurses are urgently needed, thousands of qualified applicants are turned away from nursing programs. In 2004, 26,340 qualified applicants were denied admission to nursing schools and colleges nationwide. In Massachusetts, 583 qualified applicants were turned down in 2003. Although the leading reason is faculty shortage, it is not the only one. Insufficient classroom space, clinical sites, and school budget constraints are also contributing factors. Data show a national nurse faculty vacancy rate of 8.1%, which translates to about 2.9 faculty vacancies per school. Most of the vacancies (54.3%) are in faculty positions requiring a doctoral degree. In Massachusetts, the faculty vacancy rate will reach the national level of 8.1% by 2006.[46]

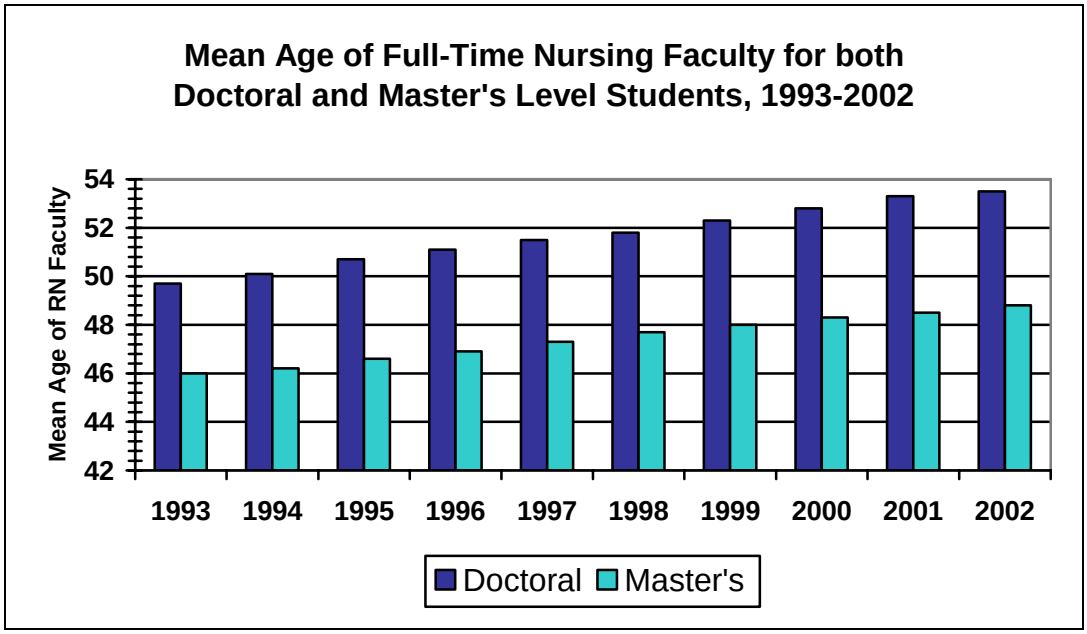
The American Association of Colleges of Nursing (AACN) identified several factors that have contributed to national faculty shortages. The number one reason for faculty job vacancy was an aging faculty and an insufficient supply of younger replacements. The number two reason was faculty nurses going into clinical services, private practice, or the corporate sector. Since faculty salaries have not kept up with the clinical marketplace, nurses with doctoral or master's degrees often prefer alternative employment.[47] According to the 2003 National Salary Survey of Nurse Practitioners, the average salary of a nurse practitioner with a master's degree working in an emergency department was $80,697. In contrast, nursing professors with a master's degree earned an annual average salary of $60,357 in 2003.[48]

The age of current doctoral and master's-level faculty is also rising. The mean age of doctoral faculty increased from 49.7 years in 1993 to 53.5 years in 2002, while that of master's-level faculty grew from 46 years to 48.8 years in the same period (Figure 3). Furthermore, almost half of nursing doctorate students were between the ages of 45 and 54, while only 6.8% were under age 35. This high average age shortens the time

[44] Buerhaus PI, Staiger DO, Auerbach DI. Why are shortages of Hospital RNs concentrated in Specialty Care Units? *Nursing Economic$*. 2000; 18(3): 111-6.
[45] Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020. Chart 2.
[46] Massachusetts Association of Colleges of Nursing. Ensuring Educated Nursing Workforce for the Commonwealth. White Paper, July 2005.
[47] Ibid.
[48] http://www.aacn.nche.edu/media/backgrounders/facultyshortage.htm

available to these future nursing faculty for productive research and teaching, and signals continued faculty shortages in the future.[49]

Figure 3



Source: American Association of Colleges of Nursing, 1993-2002
http://www.aacn.nche.edu/Publications/WhitePapers/FacultyShortages.htm

Need for better educated nursing workforce

Nursing faculty shortages coincide with a time when clinical and technological advancements in medicine require more highly educated nurses to solve ever more complex problems on the job. Recently, the American Association of Nurse Executives endorsed the idea that all registered nurses should be educated at the baccalaureate level in the future.[50] Education has a direct impact on the skills and competencies of a nurse clinician. It affects critical thinking, leadership, case management, and health promotion. The literature underscores the importance of baccalaureate-level nursing education in terms of safe patient care and quality outcomes. Linda Aiken and colleagues found a reduction in inpatient mortality in hospitals with higher proportions of nurses at the baccalaureate level or beyond. For every 10% increase in the proportion of nurses with baccalaureate degrees there was a corresponding 5% decrease in patient mortality rates.[51]

[49] Massachusetts Association of Colleges of Nursing. Ensuring Educated Nursing Workforce for the Commonwealth. White Paper, July 2005.
[50] "American Association of Colleges of Nursing Applauds Decision of the American Organization of Nurse Executives to More Registered Nursing Education to the Baccalaureate Level," Press Release. Available at: http://www.aacn.nche.edu/Media/NewsReleases/2005/AONE505.htm
[51] Aiken LH, Clark SP, Cheung RB, Sloane DM, Silber JH. Educational Levels of Hospital Nurses and Surgical Patient Mortality. *Journal of the American Medical Association*. 2003; 290(12): 1617-1623.

In 2001, about 43% of the national RN workforce possessed baccalaureate or higher degrees,[52] compared with 50% of the RN workforce in Massachusetts.[53] Based on national survey data, only a small proportion of nurses (16%) with an associate degree continue their education once they start working.[54] In Massachusetts, only 21.8% of all survey respondents (LPNs and RNs) indicated having plans to continue their nursing education in the future.[55]

In the late 1990s, hospitals, nursing education programs, and the public sector crafted a variety of independent and joint responses to alleviate the nursing shortage. Such responses included the increasing use of traveling RNs to raise staffing levels. The responses also included building relationships between hospitals and local nursing education programs to recruit more people into nursing schools. In addition, nursing schools have developed accelerated degree programs and have offered scholarships to attract more men and more minorities. In the public sector, nurse workforce commissions were developed in 22 states. Furthermore, the federal government allocated money for student loan repayment and scholarship programs that support geriatric nursing education.[56]

Between 1995 and 2001, the number of nursing students taking the national RN licensure examination (NCLEX-RN) fell by 28.8%. While that number has rebounded since 2001, there were still 9.7% fewer NCLEX-RN candidates in 2004 than in 1995. In 1995, there were 96,438 first-time exam candidates, compared with 87,173 in 2004.[57] The NCLEX-RN candidacy trend in Massachusetts mirrored the national one, falling 27.5% between 1998 and 2001, and then rising again after 2001. However, the number of candidates in 2004 was still 10.6% lower than that in 1998 (2,094 compared with 2,342).[58] Figure 4 shows both the state and national trends. Nursing school admissions in Massachusetts have also grown since 2001 (Figure 5). However, graduation rates for these programs may be falling behind earlier trends.[59]

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[52] 32.7% of nurses had baccalaureate degrees and 10.2% had master's and doctoral degrees nationwide. *Source*: Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing. The Registered Nurse Population: National Sample Survey of Registered Nurses.

[53] 35.9% of nurses had baccalaureate degrees and 13.8% had master's & doctoral degrees in Massachusetts. *Source*: 2001 Massachusetts Nurse Workforce Survey. Available at: http://www1.miseer.umass.edu/cicc/about.html

[54] "American Association of Colleges of Nursing Applauds Decision of the American Organization of Nurse Executives to More Registered Nursing Education to the Baccalaureate Level," Press Release. Available at: http://www.aacn.nche.edu/Media/NewsReleases/2005/AONE505.htm

[55] 2001 Massachusetts Nurse Workforce Survey. Available at: http://www1.miseer.umass.edu/cicc/about.html

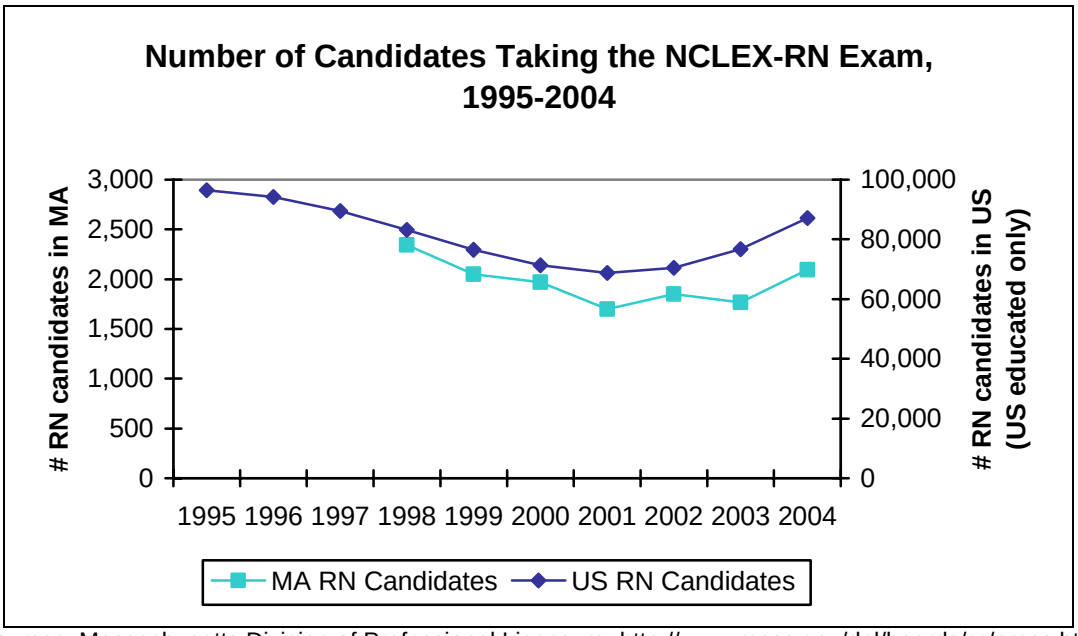
[56] Buerhaus PI, Staiger DO, Auerbach DI. Is the current Shortage of Hospital Nurses Ending? *Health Affairs*. 2003; 22(6): 191-8.

[57] American Association of Colleges of Nursing, Nursing Shortage Fact Sheet. Available at: http://www.aacn.nche.edu/media/backgrounders/shortagefacts.htm

[58] NCLEX Performance Summaries for Massachusetts Nursing Education Programs, 1998-2004. Available at: http://www.mass.gov/dpl/boards/rn/press.htm

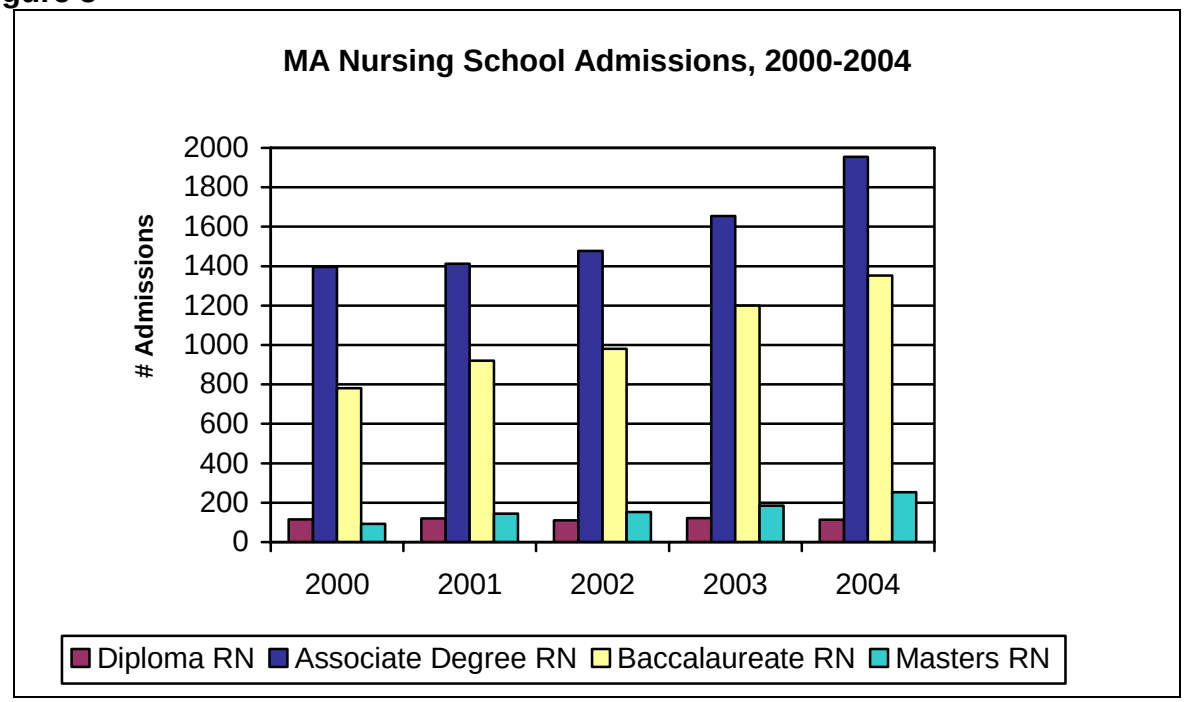
[59] Massachusetts Association of Colleges of Nursing, Ensuring Educated Nursing Workforce for the Commonwealth. White Paper, July 2005.

Figure 4



Sources: Massachusetts Division of Professional Licensure, http://www.mass.gov/dpl/boards/rn/press.htm
American Association of Colleges of Nursing, http://www.aacn.nche.edu/media/backgrounders/shortagefacts.htm

Figure 5



Source: Massachusetts Division of Professional Licensure, http://www.mass.gov/dpl/boards/rn/nedu/nedp.htm

By 2001, RN employment in hospitals and RN wages were rising. Buerhaus and colleagues found that most of the increase in RN employment since 2000 was due to members of the 50 and older age cohort returning to nursing, and to an influx of foreign-

born RNs.[60] Although foreign-born nurses account for only 5% of the total nursing workforce in the US, they represent a growing percentage of licensed nurses.[61] The recruitment of nurses from foreign countries not only has implications for US immigration policy, but also means that hospitals rely on the technical, language, and cultural competency of foreign-educated nurses. Recruitment from foreign countries also affects the nursing labor supply in those countries.

Beyond conventional strategies to recruit new individuals, nurse retention becomes an ever important labor supply strategy

The labor supply outlook indicates that conventional strategies to recruit new nurses will not be sufficient to fill vacancies in the years to come. Recent statistics show that nurses are leaving the field in ever increasing numbers. In 2000, there were 490,000 licensed nurses nationwide who were not employed in nursing. Between 1996 and 2000, this number grew by 51,668.[62] Such labor supply developments point to the importance of retaining nurses currently in the field. Sochalski found that the majority of nurses no longer working in nursing were 43 years or younger. Most of these nurses had young children, but their reported reasons for not staying on as nurses included shorter workdays, more flexible hours, more rewarding work, and better pay in alternative employments.

More important than the potential attractions of work in other fields, however, are the problems many active nurses perceive with their work environments. Aiken and colleagues have done extensive survey research on nurses' job satisfaction, burnout, and quality of care. Some of their findings are alarming: a survey of hospital RNs in Pennsylvania showed that over 40% reported being dissatisfied with their work, with nearly one-quarter reporting an intention to quit their current jobs in the near future. Among nurses under the age of 30, fully one-third planned to leave their current jobs soon.[63] In another study, Aiken and colleagues identified three key attributes of the work environment that were correlated with dissatisfaction, burnout, and intent to quit: staffing adequacy, administrative support for nursing practice, and nurse-physician relations.[64]

The challenge for hospitals is to create a work environment that is conducive to nurse retention and recruitment. One retention strategy is the magnet hospital concept, conceived during the nursing shortages of the 1980s. Organizations that successfully use strategies to attract and retain professional nurses, decrease costs, and increase quality of care may receive "Magnet" distinction from the American Nurses Credentialing

[60] Buerhaus PI, Staiger DO, Auerbach DI. New Signs of a Strengthening U.S. Nurse Labor Market? *Health Affairs*. 2004; Suppl Web Exclusives: W4-526-33.
[61] Brush BL, Sochalski J, Berger AM. Imported Care: Recruiting Foreign Nurses To U.S. Health Care Facilities. *Health Affairs*. 2004; 23(3): 78-87.
[62] Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020.
[63] Aiken LH, Clarke SP, Sloane DM, Sochalski JA, Busse R, Clarke H, Giovannetti P, Hunt J, Rafferty AM, Shamian J. Nurses' Reports on Hospital Care in Five Countries. *Health Affairs*. 2001; 20(3): 43-53.
[64] Vahey DC, Aiken LH, Sloane DM, Clarke SP, Vargas D. Nurse Burnout and Patient Satisfaction. *Medical Care*. 2004; 42 (2 suppl): II 57- II 66.

Center (ANCC). Currently, there are about 100 health care facilities recognized for excellence in nursing services, including 4 facilities in Massachusetts: Dana Farber Cancer Institute (Boston), Massachusetts General Hospital (Boston), Jordan Hospital (Plymouth), and Winchester Hospital (Winchester).[65] The literature on magnet hospitals shows that the organization of nursing found in these facilities produces benefits for patients and staff alike.[66] Aiken and colleagues studied 39 magnet hospitals, each matched with 5 comparison hospitals on 12 hospital characteristics. Magnet hospitals produced statistically superior results in 30-day Medicare mortality rates. They also had higher RN-to-patient ratios (i.e., fewer patients per nurse) and richer nursing skill mixes than comparable hospitals.[67]

Many inpatient facilities are feeling the impact of the current RN shortage. A survey of hospitals conducted by the Massachusetts Hospital Association and the Massachusetts Organization of Nurse Executives in 2004 found that the most commonly reported impact of nurse shortages was overcrowding of emergency rooms (49%), followed by emergency room diversion (39%), and reduction in the number of beds (25%).[68]

There is no simple solution to the current nursing shortage. Hospital administrators must make increased efforts at nurse retention, while the state must insure that the educational system has enough capacity to produce the next generation of nurses. Nursing schools in the state's colleges must avoid becoming a bottleneck in the nursing labor supply. In particular, adequate funding is needed to attract new nursing faculty, who are central to the training of new nurses.

Comparative Analysis of House Bill 2663 and Senate Bill 1260

Findings from the literature and the California debate indicate that the issues arising from nurse staffing are complex and multi-dimensional. Legislation mandating minimum nurse-to-patient ratios would affect more than just the number of nurses at bedsides. Mandates would also affect overall quality of care, patient safety, job satisfaction of nurses, nursing labor supply, clinical and educational resources of schools and colleges, and the financial health of hospitals. The tables that follow compare the major provisions of the two legislative bills with respect to the following three dimensions of the debate:

1) Methods of nurse staffing
2) Evaluating the impact of nurse staffing on quality of care and patient safety
3) Nursing labor force development

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[65] http://www.nursingworld.org/ancc/magnet/facilities.html

[66] Havens DS, Aiken LH. Shaping Systems to Promote Desired Outcomes: The Magnet Hospital Model. *Journal of Nursing Administration*. 1999; 29(2): 14-20.

[67] Aiken LH, Smith HL, Lake ET. Lower Medicare Mortality among a set of hospitals known for good nursing care. *Medical Care*. 1994; 32: 771-787.

[68] Massachusetts Hospital Association and the Massachusetts Organization of Nurse Executives. Survey of Hospital Nurse Staffing Issues in Massachusetts, 2004. Available at: http://www.aacn.nche.edu/Media?nsgWrkFrcReps.htm

Methods of nurse staffing

The two bills have different provisions with respect to nurse staffing. HB 2663 mandates minimum nurse staffing ratios by hospital unit and by nursing function (25 ratios altogether). The ratios are uniform for every shift, and set only minimum standards for staffing. In addition, hospitals have to use an acuity-based patient classification system (PCS) to determine actual staffing.[69] If the PCS calls for higher nurse-to-patient ratios[70] than the mandated minimum, hospitals have to add RNs to meet the higher ratios.

SB 1260, on the other hand, makes hospitals accountable for nurse staffing without imposing minimum ratios. Hospitals have to create a nurse staffing plan, which identifies the appropriate mix of nursing staff (RNs, LPNs, ancillary personnel) by unit, by shift, and by day of the week. The plan has to take into consideration patient acuity, experience and skills of nurses, and available hospital-specific technological support. Beyond taking patient and nursing care-related statistics into consideration, the final nursing plan calls for input from all direct caregivers, including nurses.

HB 2663 prohibits mandatory overtime and mandatory on-call policies. It also requires facilities—regardless of size and number of patients—to employ one full-time RN in each of the following positions:

- 1 RN to be an executive leader responsible for staffing
- 1 RN to be responsible for quality assurance
- 1 RN to assure the occupational health and safety of nurses

Hospitals may already employ nurse executives who are responsible for staffing, but are less likely to have positions dedicated to quality assurance or occupational safety. SB 1260 does not mandate additional positions related to staffing management, quality assurance, or occupational safety.

With respect to nurse staffing methods, Table 2 presents the major provisions of the two bills side-by-side.

[69] Within a year of the passage of this act, DPH is to develop a standardized acuity-based patient classification system to be utilized by all facilities. The components of the system are to include patient acuity, nursing mix, and intensity of nursing intervention.

[70] As a convention, nurses' caseload is given as a ratio. For example, a nurse-to-patient ratio 1:5 (1/5) means that 1 nurse is caring for 5 patients. A ratio of 1:2 (½) means that 1 nurse is caring for 2 patients. The ½ ratio is higher, hence "better" for the patient, than a ratio of 1/5.

Table 2: Methods of Nurse Staffing: Comparison of Provisions of HB 2663 and SB 1260

Areas affected by proposed legislation	House Bill 2663	Senate Bill 1260
Facilities	Teaching hospital of UMASS; private or state-owned general acute care hospital; acute psychiatric hospital; specialty hospital; acute care unit within a state operated hospital.	Teaching hospital of UMASS; general acute care hospital; chronic disease hospital; acute inpatient rehabilitation hospital.
Ratios/staffing plans	1) Facilities to maintain minimum direct-care nurse-to-patient ratios (total 25 ratios); 2) Follow staffing requirements based on a patient classification system (PCS) if PCS requirements call for richer staffing than minimum ratios.	Develop and implement a written nurse staffing plan based on input from nurses and members of the patient care team. Plans to be based on a PCS, which takes into account unit-based patient characteristics (number and acuity), nurse skill mix, and hospital characteristics (technological support).
Mandated positions and duties	Employ 1 FTE registered nurse (RN) as executive leader to ensure sufficient RN staffing; 1 FTE RN responsible for quality assurance; 1 FTE RN ensure nursing staff occupational health and safety. Prohibits unlicensed personnel to perform RN duties.	No provision
Mandatory overtime	Prohibits mandatory overtime or on-call policies.	No provision
Duties of facilities	As a condition of licensing: 1) Submit to DPH a prospective staffing plan; 2) Submit an audit of staffing plan; 3) Submit a certification that staffing plan is adequate and appropriate; 4) Post staffing plan on hospital premises; 5) Write an in-house education plan for care personnel; 6) Provide orientation and competency validation to nurses before patient care assignment by unit.	1) Set forth a mechanism to obtain input from nurses and other members of the patient care team for use in staffing plan; 2) Continuously review, update, and make changes to the staffing plan when necessary; 3) Submit nurse staffing plan to DPH including evaluation of said plan; 4) Post staffing plan on hospital premises.
Duties of DPH	1) Create rules and regulations for a standardized acuity-based patient classification system (PCS); 2) Develop within a year a PCS to be utilized by all facilities; 3) Enforce the law.	1) Conduct random audits of nurse staffing plan; 2) Issue penalty if staffing plan not filed within 30 days of DPH's notice to facility, 3) Enforce the law.
Penalty	If not in compliance of the law: 1) Revocation of license, or fine of up to $25,000 per violation or both; 2) Civil penalty of up to $25,000 per violation; 3) Facility to post its violation notice on the premises.	Penalty to be established by DHP through regulation.

To carry out the provisions of the acts, both legislative bills delegate duties to facilities and to the Department of Public Health (DPH). Both bills ensure accountability and transparency by requiring hospitals to file staffing plans with DPH and to post them on hospital premises. In addition, facilities have to submit audits of and modifications to their staffing plans.

HB 2663 requires hospitals to prepare an in-house education plan that provides orientation to nurses in the clinical area(s) where nurses provide patient care. It also requires documentation that nurses demonstrate competence in their assignment area(s). No nurse can be assigned to a unit unless his/her competency in the assignment area is certified and documented. SB 1260 has no provision for orientation and competency validation (however, existing nursing practice regulations already required that staff be competent).

Beyond enforcing the law, DPH has an added mandate under HB 2663. Within a year of passage, DPH has to establish a standardized acuity-based patient classification system for all hospitals to use in the future. Results from current systems used by hospitals are facility-specific and cannot be compared across units and facilities. A standardized system is to make the PCS staffing results comparable statewide.

Penalties for non-compliance are explicitly defined under HB 2663. If non-compliance is established by DPH, the facility's license may be revoked, or a fine of up to $25,000 may be imposed for each day the facility is in violation, or both. The bill allows for civil litigation and penalties as well. SB 1260 does not specify fines, but requires DPH to establish regulations for imposing penalties.

Evaluating the impact of nurse staffing on quality of care and patient safety

Nursing care appears to directly impact health care quality and patient safety. In recent years, the health care community has intensively studied these relationships. The National Quality Forum (NQF) has created and published 15 consensus standards to measure nurse-sensitive care.

Although there is a mandated full-time RN position dedicated to quality assurance, HB 2663 does not have provisions for measuring the impact of mandated ratios on patient outcomes.

SB 1260 mandates that facilities measure how patient outcomes are affected by their established staffing plans, and that they collect and submit data to the Betsy Lehman Center accordingly. Three measures will be evaluated: nursing care hours per patient day (HPPD), a measure widely applied when determining unit-based nurse staffing, and two additional measures to be selected from the NQF consensus list. SB 1260 makes the Betsy Lehman Center the repository of such outcome data for acute care facilities. The bill does not, however, require that the impact of nurse staffing plans on the working conditions or on the job satisfaction of nurses be measured. The Department of Public Health is to provide technical assistance to the Betsy Lehman Center with respect to data methodology. Table 3 details these provisions.

Table 3: Comparison of Nurse Staffing Evaluation Provisions of HB 2663 and SB 1260

Areas of proposed legislation	House Bill 2663	Senate Bill 1260
Duties of facilities	No provision	1) Collect data; 2) Monitor and evaluate patient care through a statewide use of three evidence-based, nurse-sensitive performance measures; 3) Report measures to the Betsy Lehman Center annually.
Duties of the Betsy Lehman Center	No provision	1) Select two performance measures from nationally recognized measures endorsed by the National Quality Forum. Third measure is to be Nursing Care Hours Per Patient Day (HPPD). 2) Develop a uniform format for hospitals to report such measures annually.
Duties of DPH	No provision	Provide methodology to the Betsy Lehman Center to adjust HPPD measure for differences in patient characteristics.

Nursing labor force development

Statistical evidence shows that there is a shortage of nurses and nursing educators nationwide and in Massachusetts. The nursing shortage reflects fundamental changes in population demographics, career expectations of women, work attitudes, and job dissatisfaction. These effects are likely to exacerbate the nursing shortage for years to come. Finding a solution to the current nursing shortage requires a joint response from multiple stakeholders, including state officials, health care facilities, schools, colleges, and the nursing community.

HB 2663 does not have provisions with respect to workforce development.

SB 1260 focuses on three distinct areas: 1) Studying existing programs related to workforce development in Massachusetts; 2) Creating a central state data repository of statistics related to nursing; 3) Establishing programs for and dedicating funds to workforce recruitment and retention.

SB 1260 authorizes and directs the Secretary of Administration and Finance, in collaboration with various public agencies and boards, to take inventory of the state's currently available resources related to workforce development. Areas of analysis include potential nursing school applicants, faculty vacancies, nurse faculty resources, and educational and clinical capacities for nursing student placement.

To determine the kind of comprehensive statewide plan needed, state agencies and boards collecting data and conducting surveys related to the profession of nursing are required to regularly submit data to the Massachusetts Center For Nursing, Inc.

SB 1260 establishes the Clara Barton Nursing Excellence Trust Fund in the amount of $30 million. Fund revenues support the recruitment and retention of nurses and nursing faculty through a number of programs.

Table 4 lists the workforce development provisions of both bills.

Table 4: Comparison of the Workforce Development Provisions of HB 2663 and SB 1260

Areas of proposed legislation	House Bill 2663	Senate Bill 1260
Review of existing nursing resources	No provision	1) Secretary of Administration and Finance to create an inventory of existing statewide programs related to workforce development and determine their efficacy; 2) Board of Higher Education in collaboration with other state agencies to study the nurse faculty shortage and provide data on the current and future extent of faculty shortage.
Collect statewide nursing workforce data	No provision	All state agencies and boards that collect data on the practice of nursing, supply of nursing faculty, and nursing workforce to regularly submit data and information related to such areas to the Massachusetts Center for Nursing, Inc.
Nurse recruitment and retention programs	No provision	Establish the Clara Barton Nursing Excellence Trust Fund with $30 million to achieve the following: 1) Establish a student loan repayment program; 2) Establish a faculty position repayment program; 3) Establish an expert nursing corps program for professionals to serve as mentors to new or novice nurses; 4) Establish grants to institutions that foster partnerships between higher education and clinical agencies that promote the recruitment and retention of nurses; 5) Provide matching grants to hospitals that commit resources or personnel to nurse education programs.

Summary of comparative analysis

House Bill 2663

- Mandates minimum nurse staffing ratios but does not address measuring their effects on quality of care and patient safety, nurses' working conditions, or job satisfaction.
- Does not address whether enough nurses will be available for hospitals to comply with minimum staffing ratios. Neither does it address the availability of nurses for other facilities, e.g., nursing homes and long term care facilities.

- Prohibits mandatory overtime.
- Imposes penalties for violations.

Senate Bill 1260

- Makes hospitals accountable for their staffing plans and makes plans transparent to the state agency (DPH) and the general public.
- Requires facilities to collect and report data on three nurse-sensitive patient indicators to measure the effects of their staffing plans on quality of care and safety (but does not address measuring changes in working conditions or job satisfaction of nurses).
- Supports workforce development through recruitment and retention programs for nurses and nursing faculty, and establishes a trust fund in the amount of $30 million.
- Has no provision on mandatory overtime.
- Does not define penalties.

Policy implications: Benefits and risks associated with HB 2663 and S1260

The last section of this report summarizes the potential policy implications of the key provisions of HB 2663 and SB 1260. We present the possible benefits and risks associated with these two proposals for nurse staffing in four important domains:

1) Patient safety and quality of care
2) Accountability and transparency
3) Costs and access to care
4) Labor market and workforce development

Patient safety and quality of care, cost and access, and labor force development emerged from the literature as significant areas for policy consideration. After reviewing the two bills, we identified accountability and transparency (associated with reporting, monitoring, and evaluation) as another significant area with policy implications in Massachusetts. Throughout the section we follow this framework and discuss policy implications—potential benefits and risks—of each bill. Policy implications are based on findings from the literature or deductions from economic theory.

The two bills are similar in their primary objectives, i.e., improving quality of care, patient safety, and work environment of nurses. However, the bills take different approaches to achieve their objectives. To increase the number of nurses available in various hospital settings, HB 2663 mandates fixed nurse-patient ratios, whereas SB 1260 requires hospitals to develop and implement acuity-based nurse staffing plans. There is general agreement that appropriate nurse staffing levels are associated with improved patient outcomes and safer care. The debate, nationally and in Massachusetts, is about what the appropriate nurse staffing levels are, and whether mandated staffing ratios are the best strategy to reach these levels, and thus to improve nurse-sensitive quality of care indicators. At present, there is no scientific evidence in the literature that would establish optimal nurse staffing ratios.

1) Patient safety and quality of care

Substantial evidence in the literature suggests that richer staffing is associated with reduced patient mortality rates, shorter length of stay, fewer complications, and fewer medical errors. In addition, richer staffing puts less strain on nurses' working conditions and improves job satisfaction. Achieving quality improvement is at the heart of both bills. However, baseline data on actual nurse staffing in hospitals are currently lacking in Massachusetts. Also, there are currently no requirements for consistent collection and monitoring of nurse-sensitive patient outcome measures (though SB 1260 would establish such requirements). Thus, we lack at present the capacity to evaluate hospital performance on nurse-sensitive quality indicators.

Three important domain areas related to patient safety and quality are discussed in this section: data collection and outcome measures, nurse working conditions (overtime), and acuity-based staffing plans with nurses' input.

Data collection and outcome measures

The first large obstacle in evaluating the financial, quality, and labor market impact of the proposed legislative bills is the current lack of publicly available data on hospital nurse staffing. For example, public agencies do not presently collect data on direct-care nursing hours per patient day (HPPD). This data would be needed to calculate staffing ratios. Without large-scale data collection on staffing or surveying a representative sample of facilities, it is impossible to establish a baseline picture of the current state of nurse staffing and compare it to the staffing requirements in HB 2663. Beyond staffing data, it is also not clear whether the state collects the data required to create a comprehensive statewide plan to address nursing workforce issues.

Once requirements for data collection are established, outcome indicators can be constructed and measured. These indicators would assess the bills' impacts on quality care, patient safety, and nurses' working conditions. A variety of indicators of patient safety and quality of care are readily available from nationally recognized quality standard setting organizations, such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the National Quality Forum (NQF). Over the years, each agency has published several nurse-sensitive outcome indicators and recommended or mandated their use.

HB 2663 has no mandates for workforce data collection or for measurements of quality of care, patient safety, or working conditions of nurses. SB 1260 has mandates for collection of data on the nursing workforce and on nurse-sensitive indicators (Section 3, Enhancing the Availability of Nursing Workforce Data; Section 4, Evaluation of Patient Care Using Nurse-Sensitive Performance Measures).

Potential benefits under SB 1260

SB 1260 mandates the collection of workforce data and the reporting of 3 nurse-sensitive outcome measures from the NQF list. This mandate is an opportunity for the state to close the gap between its extensive data needs for a comprehensive policy analysis of nurse staffing and what it currently collects. It is also an opportunity to choose multiple outcome measures (patient-, nursing intervention-, and system-centered measures) to gain a comprehensive understanding of the current level of patient safety and quality of inpatient care throughout the state.

Potential risks/concerns under SB 1260

SB 1260 requires that all agencies and public boards that collect data on the practice of nursing submit such data to the Massachusetts Center for Nursing (MCN) at Worcester State College. The MCN is already the state's data repository regarding the supply and demand of healthcare workers in the Commonwealth. This legislation restates the status quo and does not name agencies and public boards—hence making them accountable—for data submission; nor does SB 1260 identify currently missing data elements for submission. The availability of a nursing- and quality care-related database would enable policy makers to create a comprehensive strategy for workforce

development. It would also enable them to evaluate the implications of important policy questions.

Unfortunately, funding for the Center for Nursing is not identified. Unfunded mandates could harm the Centers' ability to perform data collection and analysis necessary for timely assessment of nurse staffing, patient safety, quality, and other policy questions.

In addition, the number of nurse-sensitive patient outcome measures required by SB 1260 may be insufficient. Only 3 indicators are proposed, whereas the NQF has developed 15 nurse-sensitive measures, and a JCAHO taskforce identified 35 indicators conducive to healthcare staffing effectiveness. It seems that a more comprehensive picture would emerge on patient safety and quality if the bill mandated a larger number of quality indicators (e.g., all 15 NQF measures). With only three indicators, policy makers may miss the opportunity to improve patient care where needed.

Nurse staffing also has an effect on nurses' working conditions and the way nurses feel about their jobs. However, there are no provisions in SB 1260 for collecting data on nurses' satisfaction with working conditions. Such data would help to quantify the effects of improved nurse staffing on nurses' perceptions of their working conditions.

Nurses working conditions (overtime)

Overtime is used by hospitals either because they are chronically short-staffed or because they have to handle normal variation in patient census, acuity, and staff absences. Overtime can have a large impact on the job performance of nurses, and thus on patient safety. HB 2663 has a provision for prohibiting mandatory overtime and mandatory on-call policies. SB 1260 has no provisions in this area.

Potential benefits of HB 2663

Research has shown long work shifts to be associated with a higher likelihood of nurses making medical errors. Rogers and colleagues found that the odds of making an error during a nursing shift of 12.5 hours or longer were over three times as great as during a shift of 8.5 hours or less.[71] Beyond the impact on patient safety, extensive overtime work may have negative impacts on the health and well-being of nurses themselves. Research across occupational categories has shown strong associations between frequent overtime or extended-shift work and occupational injuries and illnesses.[72] A study looking specifically at Canadian nurses found overtime work to be associated with lost time due to injury claims.[73] In a survey of RNs in Pennsylvania, job satisfaction was linked to working conditions such as mandatory overtime. In the survey, 21.9% of RNs employed who reported mandatory overtime responded that they were either "very dissatisfied" or "dissatisfied" with their job, while only 10.8% of RNs without mandatory

[71] Rogers AE, Hwang W, Scott LD, Aiken LH, Dinges DF. The Working Hours of Hospital Staff Nurses and Patient Safety. *Health Affairs*. 2004; 23(4): 202-12.
[72] Dembe AE, Erickson JB, Delbos RG, Banks SM. The Impact of Overtime and Long Work Hours on Occupational Injuries and Illnesses: New Evidence from the United States. *Occupational and Environmental Medicine*. September, 2005, Vol. 63, Issue 9.
[73] O'Brien-Pallas L, Shamian J, Thomson D, Alksnis C, Koehoorn M, Kerr M, Bruce S. Work-Related Disability in Canadian Nurses. *Journal of Nursing Scholarship*. 2004; 36(4): 352-7.

overtime were "very dissatisfied" or "dissatisfied".[74] It is logical that excessive overtime work, particularly when mandatory, would contribute to job dissatisfaction. Excessive overtime would also have detrimental effects on health and safety of nurses and their patients.

Potential risks/concerns under HB 2663

Obviously, hospitals that presently rely on mandatory overtime will have to hire more nurses to staff beds if mandatory overtime is prohibited. Those facilities that are unable to hire enough nurses would be forced to close some beds, since they would be unable to meet the mandatory nurse-to-patient ratios; bed closures obviously affect access to care. An even more serious concern is that prohibition of mandatory overtime in all but the most exceptional circumstances (state or national emergencies) could lead to unintended nursing shortages that could impact care. In these instances, patients would have to be transferred to other units or even to other facilities if beds in other units are unavailable. Such medically unnecessary transfers are detrimental to patient care. While the routine use of mandatory overtime may indicate a failure of management, its use as an emergency backup staffing method may be preferable to the alternatives. However, mandatory overtime and other staffing approaches by hospitals should be monitored to make sure that they do not result in excessively long work shifts.

Mandatory overtime is not the only concern relating to extended work shifts. Many nurses work overtime and extended shifts voluntarily to earn extra money (from overtime differential pay) or to create a workweek schedule that is more desirable for personal reasons (for example, working three or four extended shifts per week, rather than the standard five-day workweek). Even when nurses work such shifts voluntarily, the risks of extended shift duration have to be considered. Findings on extended shift durations do not make distinctions between mandatory and voluntary overtime. Negative impacts of overtime and extended-shift work on employee health and job performance apply equally to both scenarios.

The nursing shift data analyzed by Rogers and colleagues suggests that nurses in their study were often working extended shifts voluntarily. The nurses reported information on the scheduled length of 5,258 shifts. 1,623 (30.9%) of these shifts were scheduled to last 12.5 hours or longer. A total of 4,652 overtime shifts were reported, but only 360 (8.4%) of these were reported as being mandatory overtime.[75] Since this study finds a much greater likelihood of nurses making an error during shifts of 12.5 hours or longer, mandatory as well as voluntary overtime and extended shifts should be limited. In its recent study of the nursing work environment, the Institute of Medicine recommended that nursing shifts not exceed 12 hours in any 24-hour period, whether or not nurses would voluntarily work such shifts.[76] Examples from other industries suggest that

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[74] Pennsylvania Department of Health, Special Report on the Characteristics of the Registered Nurse Population in Pennsylvania, November 2004. Available at: http://www.dsf.health.state.pa.us/health/lib/health/RNReportNov2004.PDF.

[75] Rogers AE, Hwang W, Scott LD, Aiken LH, Dinges DF. The Working Hours of Hospital Staff Nurses and Patient Safety. *Health Affairs*. 2004; 23(4): 202-12.

[76] Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: National Academies Press, 2004, p. 237.

recovery from extended work periods may require more than one day. Off-duty intervals ranging from 10-16 hours are either suggested or already mandated for many transportation workers.[77] Nurses who are able to obtain appropriate rest between shifts will return with less fatigue and their performance and alertness levels will have returned to normal. Any prohibition of mandatory overtime, such as that contained in HB 2663, should also address the issue of shift length to ensure that these lengths are not excessive (over 12 hours) and that there are adequate rest periods (at least 12 hours) between shifts.

Acuity-based staffing plans with nurses' input

Staffing plans that take into account patient needs, the skills and experience of caregivers, and the availability of hospital-based technological support are the best way to improve safety, quality of care, and nurses' job satisfaction. Creating richer staffing is at the core of both bills, but each chooses a different method of reaching this goal. HB 2663 mandates fixed nurse-patient ratios, and the use of an acuity-based patient classification system (PCS). If PCS-based staff requirements are higher than the mandated ratios, the hospital has to staff according to the PCS. Otherwise, the same fixed ratios apply, regardless of the shift (day, evening, or night). SB 1260 requires acuity-based nurse staffing plans with input from the nursing staff.

While it is likely that richer ratios will result from either bill, policy makers should note concerns around the methods used to calculate nursing needs.

Mandated ratios do not take into consideration patient acuity, nursing skill levels, or the availability of other licensed and non-licensed care givers. Moreover, research indicates that current patient classification systems are hospital-specific. That is, PCSs are based upon the characteristics of a single unit for which they predict the nursing workload. As a result, PCS scores are difficult to compare across units within the same facility, or across facilities within a state.

In addition, PCSs cannot take the skills of individual nurses into full consideration. A computerized PCS can only consider generic nursing categories (RN, LPN, etc.), while a nurse manager can consider the skill sets of individual nurses within the broader categories when planning staffing. Another weakness of PCSs is that they cannot forecast future staffing needs very effectively. PCSs can only predict future staffing levels based on historical averages in admissions, discharges, and nursing hours per patient day. But since hospitals have no control over the number and acuity of patients they will encounter, these projections may prove unreliable.

Today, 36% of the hospitals in Massachusetts have already invested in a variety of workload forecasting systems. We do not know the characteristics and capabilities of such local systems. Development of either a uniform statewide PCS or hospital-specific systems in all the state's hospitals will require a large commitment of resources. Soliciting input from direct care personnel into staffing plans is important in this process, as this was identified as a best practice used in magnet hospitals.

[77] Ibid., p. 231.

Of course, the ultimate purpose of any patient classification system is to improve patient safety and quality of care by ensuring appropriate staffing. The true measure of the effectiveness of any PCS is the set of nurse-sensitive quality indicators discussed above.

2) Accountability and transparency

Legislative objectives in any policy area can be met only if accountability mechanisms are built in from the start. Accountability requires that the results of data reporting, monitoring, and evaluation are easily available to the legislature and the public. In other words, the process must be transparent. Key elements of accountability addressed in this section are oversight and enforcement. Both proposed bills contain provisions for accountability and transparency, but these provisions are quite different.

Potential benefits under HB 2663

HB 2663 mandates that DPH create regulations for an acuity-based patient classification system that is standardized across the state. This system will permit state agencies to make valid comparisons of patient acuity and nurse staffing across hospitals. Facilities have responsibilities to report to DPH their staffing plans, the plan's audit, and a written certification that their CPS is adequate and appropriate. They also have the responsibility to post their staffing plans in public areas on hospital premises. To encourage compliance, HB 2663 lays out potential administrative and civil penalties. If a hospital is found in violation, it may lose its license to operate, and/or pay an administrative fine up to $25,000 per day in violation, and will be open to civil litigation.

Potential risks/concerns under HB 2663

We will estimate increased administrative costs for hospitals and for the DPH in the Part II report, to be submitted by September 1, 2005. Presumably, hospitals that do not already have a PCS will need to purchase software packages from private vendors. DPH will also incur additional administrative costs. The bill does not allocate additional funds for DPH to fulfill these added regulatory duties. Any unfunded mandate may detract from DPH's ability to perform its regulatory roles.

Because the penalties for violation are potentially severe, it is conceivable that hospitals would choose to close beds rather than expose themselves to non-compliance, loss of reputation, litigation, and hefty fines. Closure of beds will reduce the operating capacities of hospitals and could restrict access to care.

The final component of transparency and accountability involves collecting, analyzing, and making publicly available data that explicitly links nurse staffing to patient safety and outcomes. Unlike SB 1260, HB 2663 does not mandate any data collection that links staffing and outcomes.

Potential benefits of SB 1260

SB 1260 has requirements similar to HB 2663 on reporting of nurse staffing plans. Hospitals have to submit staffing plans that are certified by the hospitals' governing

boards, and submit any changes to their plans. DPH may choose to audit any hospital's plan. Hospitals also have to post a copy of their staffing plans in a manner that is readily available to hospital staff and the general public. There is a penalty for non-compliance, the level of which is to be determined by DPH.

Another benefit of SB 1260 is that it does mandate collection of data that links nurse staffing and patient outcomes, using nurse-sensitive indicators defined by the NQF. This collection will facilitate hospital transparency and accountability.

Potential risks/concerns under SB 1260
SB 1260 does not assign DPH a role in establishing standards for PCSs, as HB 2663 does. Although hospitals are thus provided with greater flexibility, statewide comparability of hospital data is limited.

The use of patient outcome indicators is a positive step. However, the number of indicators chosen (3) may be inadequate to give policy makers and healthcare professionals a comprehensive picture of patient safety and quality of care. The NQF, for example, has developed a set of 15 nurse-sensitive indicators.

3) Costs and access to care

If either bill is to improve patient safety, quality of care and nurses' working conditions, the number of nurses will likely increase and nurse staffing at hospitals will improve. The degree to which the proposed ratios in HB 2663 are likely to increase nursing needs and costs to hospitals statewide cannot be estimated, because baseline data on current levels of staffing are not available. The potential effects of SB 1260 would be much more difficult to estimate, even if baseline data on hospital staffing existed, because it does not mandate any specific ratios, or set target levels for improvement in patient outcome indicators.

Hospitals will not be the only entities to incur costs under the two proposals.
Both bills call for DPH to monitor and enforce their respective provisions. In addition, SB 1260 calls for evaluations of the current state of the Massachusetts nursing labor market to be conducted with participation of a number of public agencies, and for the Massachusetts Center for Nursing to function as the state's nursing data repository and to conduct analyses as requested.

Compliance costs for hospitals could come to be spread across payers in the healthcare system, as hospitals attempt to shift some of their increased direct labor costs to public and private insurers. Such cost shifting could have a significant impact on the state budget as well, as the state's Medicaid program (MassHealth) costs may also rise. The costs of higher nurse staffing may be offset, at least partially, by reductions in length of stay, reduced error rates, and the like, but any such offsets would most likely accrue to payers rather than hospitals; hence hospitals will seek to shift costs to the payer side.

Aside from direct financial costs, increased nurse staffing requirements could have indirect impacts on access to care. If facilities that cannot offer competitive wages and

benefits to attract more nurses have to close beds to comply with mandated ratios, then access to needed care may be reduced.

We conclude that hospital costs will rise if nurse staffing increases due to either of the two proposed bills. However, it is impossible to gauge the full statewide economic effect of either bill, due to the complicated nature of how costs and benefits would be distributed among the various stakeholders. Most of all, due to the current unavailability of important data elements, we cannot estimate the potential change in hospital wage costs statewide. We will estimate the costs for a sample group of hospitals in Part II of the report.

4) Labor market and workforce development

Requirements for more nurses come at a time when nurses, nursing faculty, and nursing students are in short supply. A greater supply of nurses is urgently needed to comply with either of the bills. The labor force is aging and demand for nursing will outpace the growth of supply for the foreseeable future. The state needs a comprehensive strategy to ensure a sufficient supply of nurses to meet current and future demand.

HB 2663 does not address any aspect of the current nursing labor shortage and has no provisions for workforce development. SB 1260 has several provisions to address the problem. (Section 1: Analysis of Workforce and Faculty Resources; Section 4: Establishing the Clara Barton Nursing Excellence Programs; Section 5: Addressing the Nursing Faculty Shortage in Public Institutes of Higher Education).

Potential benefits under SB 1260

SB 1260 recognizes the urgent need for solutions to the state's chronic nursing shortage. Section 1 of SB 1260 mandates a study of all state agency programs to determine the effectiveness of such programs related to workforce development. The rest of the bill establishes a $30 million trust fund and identifies programs among which proceeds from the trust fund should be disbursed. These programs pledge funds for tuition reimbursement, faculty salaries, and collaboration between clinical facilities and schools. The benefits of supporting education and workforce development may not appear for years to come. Thus, it is unclear whether the proceeds from a $30 million trust fund will have sufficient impact. However, any additional financial support for nursing is a positive step.

Potential risks/concerns under SB 1260

As mentioned above, the annual revenue from a $30 million trust fund will be variable and may not be sufficient to alleviate the nursing shortage in the short timeframe needed. A specific goal for the number of new nurses needed each year between 2005 and 2020 should be established along with a clear and defined plan for how to achieve these goals.

Conclusions

In recent years, both policy makers and the general public have become greatly concerned about the issues of health care quality and patient safety. As managed care, with its emphasis on cost reduction, has transformed the healthcare industry, issues of nurse staffing have risen to the forefront of the broader debate. Clearly, nurses are essential healthcare providers, and current policy debates center on ensuring that hospitals have sufficient nurse staffing to provide high-quality, safe medical care.

Two bills in front of the Massachusetts legislature (HB 2663 and SB 1260) address this long-standing and important problem. The bills are similar in their objectives: the improvement of patient safety, quality of care, and the work environment for nurses by adding more nurses to bedsides. However, the two bills propose different approaches.

After reviewing the literature and the provisions of the two bills, we conclude that both HB 2663 and SB 1260 have many potential benefits for all stakeholders involved (patients, nurses, hospitals, public and private payers). We find the most potential benefit, and the least potential risk, in the following elements of the two proposals.

1. Patient safety and quality of care

Because the exact relationships between specific nurse-to-patient ratios and safety/quality of care are not presently known, SB 1260's provisions requiring hospitals to develop and implement staffing plans make more sense than those of HB 2663 for the near future. Combined with SB 1260's policies for data collection on outcomes, the nurse staffing plans would be a powerful tool for evaluating hospitals on staffing adequacy and patient care. The involvement of DPH and other public agencies in monitoring and evaluation will provide incentives for hospitals to improve their nurse staffing levels where needed to achieve better patient outcomes.

2. Accountability and transparency

Both proposals would strengthen hospital accountability and provide transparency to the legislature and the public by requiring hospitals to develop nurse staffing plans and submit them to DPH. Both also give DPH the authority to monitor the content and implementation of these plans. Both bills require hospitals to post their staffing plans for each day in a public space. Both bills also give DPH the authority to penalize hospitals that are in non-compliance. Unlike HB 2663, SB 1260 does not specify the penalties, leaving this to DPH's determination.

3. Costs and access to care

At this point, we are unable to evaluate the potential impact of either HB 2663 or SB 1260 on hospital costs, or to determine whether additional costs would result in reduced access to care. Either bill, if enacted, will almost certainly lead to increased nursing labor costs for hospitals. While there may be cost offsets associated with higher nurse

staffing, the extent of these offsets is not known at present. Part II of the report, to be delivered by September 1, 2005, will provide estimates of the cost of compliance with HB 2663 for a sample group of hospitals. It will also provide an estimate of the costs DPH and other public agencies may incur as a result of their monitoring and enforcement duties under both bills.

4. Labor market and workforce development

SB 1260 directs state agencies to evaluate programs that relate to nursing education and workforce development. It establishes a $30 million trust fund to further these goals. These are critical first steps. The nursing shortage is a serious, long-term problem that will require a real, lasting commitment of resources and energy to solve.

Part II of this analysis will estimate the financial impact on hospitals of the passage of HB 2663 through sampling of selected facilities, assess the financial impact of SB 1260 on nursing schools and colleges, and provide high-level economic implications with respect to benefits and risks associated with passing either of the two bills. Part II will be delivered on September 1, 2005.